DCS & Labelling Worldwide

(HQ)	SATO International Pte. Ltd.
(Japan)	SATO Corporation
(Singapore)	SATO Asia Pacific Pte. Ltd.
(Malaysia)	SATO Auto-ID Malaysia Sdn. Bhd.
(Thailand)	SATO Auto-ID (Thailand) Co., Ltd
(China)	SATO Shanghai Co., Ltd
(USA)	SATO America, Inc.
(Belgium)	SATO Europe NV
(Germany)	SATO Deutchland GmbH
(Poland)	ATO Polska SP Z O.O.
(UK)	SATO UK Ltd
(Holland)	SATO Rotterdam Logistics Center
Factory :	
(Malaysia)	SATO Malaysia Electronics Manufacturing Sdn. Bhd.
(Malaysia)	SATO Labelling Malaysia Electronics Sdn.Bhd.

DCS & Labelling Worldwide

CL408e, CL412e
CL608e, CL612e

The New Sato 'Enhanced' Series

Quick Guide

SATO Asia Pacific Pte. Ltd.
438A Alexandra Road
#05-01/02 Alexandra Technopark
Singapore 119967
Tel : (65) 6271 5300; Fax : (65) 6273 6011
Sales Hotline : (65) 6276 2722; Service Hotline : (65) 6273 6455
Email : sales@satoasiapacific.com
Website : www.satoworldwide.com

© Copyright 2003
SATO Asia Pacific Pte. Ltd.

Warning : This equipment complies with the requirements in Part 15 of FCC rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception requiring the operator to take whatever steps necessary to correct the interference.

All rights reserved. No part of this document may be reproduced or issued to third parties in any form whatsoever without the express permission of SATO Asia Pacific Pte. Ltd. The materials in this document are provided for general information and are subject to change without notice. SATO Asia Pacific Pte. Ltd. assumes no responsibilities for any errors that may appear.

Label Rewinder

The Label Rewinder is an external mechanism that allows labels to be rewound on a roll as they are being printed. The maximum roll capacity is 10".

Table of Contents

What You Get 2

Controls & Indicators 3
Operator Panel 3
LED Indicators 3
Adjustments 3
Keys 4
Rear Panel Connections 4

Initial Setup 5
Connecting the Printer 5
Printing a Test Label 6
Configuring the Printer 7
Computer Connections..... 8
IEEE 1284 Parallel Interface 8
Serial Interface 8

CL 'e' Series Windows Drivers..... 10

Troubleshooting the Printer. 10

CL 'e' Specifications 14

Media Supplies 15

Options 15

This Quick Guide was prepared to get you up and running quickly. It will enable you to get your new SATO CL 'e' Series installed and printing with a minimum of effort. However, it is recommended that you familiarise yourself with the contents of the Printer's *Operator & Technical Reference Manual* for detailed descriptions so you will be able to properly use the printer to its full potential.

What You Get

The CL 'e' Series Thermal Transfer printer comes packed in a protective carton. Included in the carton are the following items :

- CL 'enhanced' Series Printer
- Quick Guide
- Driver / Manual CD ROM
- Head Cleaning Sheet
- Sample Ribbons
- Ribbon Take-Up Core (Not for Export out of Singapore)
- Power Cable
- Test Printout Labels

After taking the CL 'e' Series Printer out from the carton and removing the protective plastic cover, it is ready for installation.

Media & Supplies

The Printer comes from the factory set up to operate with high-quality TechnoTherm thermal transfer media and ribbons. A sample roll of wax ribbon, ST111 (76.2mm x 15M) is shipped with the printer.

Other media and supplies may or may not give acceptable results in the printing. It is likely that you will have to experiment with the heat and speed settings to obtain quality printing. Instructions for adjusting the heat and speed for optimum print quality can be found in the *Operator & Technical Reference Manual, Section 3.*

Options

Plug-In Interface

The Printer uses Plug-In Interface cards for maximum flexibility. Currently available interfaces are IEEE1284 Parallel, Serial RS232, Universal Serial Bus (USB) and 10/100BaseT Eternet

Label Dispenser

The Printer Label Dispenser Option is an internal mechanism that provides the ability to print labels in the 'demand' mode. When it is installed, the printer dispenses one label at a time, peeling the backing from the label. The excess label backing is taken up on an internal rewind spindle.

PCMCIA Memory Expansion

The Memory Expansion option provides the connectors and interface for a PCMCIA Memory Cards. Each PCMCIA card slot will accept SRAM memory cards up to 4MB SRAM or Flash Memory Card of up to 16MB.

Calendar Option

The Calendar Option allows the date and time to be maintained in the local printer where it can be recalled for label printing. The Calendar Option is Y2K compliant and supports both standard and Julian dating.

CL 'e' Series Specifications

The following is a general list of the CL 'e' series specifications. For a complete listing, please refer to the *Operator & Technical Reference, Section 1*.

SPECIFICATION	CL408e	CL412e	CL608e	CL612e
PRINT				
Method	Thermal Transfer or Direct Thermal			
Speed (User Selectable)	2 – 6 ips 50 – 150 mm/s		4 – 8 ips 100 – 200 mm/s	
Processor	32-Bit RISC, 133MHz			
Resolution	203dpi 8 dpmm	305 dpi 12 dpmm	203dpi 8 dpmm	305 dpi 12 dpmm
Maximum Print Length	49.2" 1249mm	32.8" 833mm	49.2" 1249mm	32.8" 833mm
Maximum Print Width	4.1" 104mm		6.0" 152mm	6.5" 164mm
MEDIA				
Width	0.87" – 5.1" 22mm – 131mm		1.96" – 7" 50mm – 178mm	
Minimum Length	0.24" (6mm)		0.78" (20mm)	
Roll OD (Maximum)	8.6" (218mm), Wound Face-In			
Label Sensing	Transmissive See-Thru, Reflective I-Mark, Continuous Forms			
RIBBON				
Length	1475 ft (450M)		1345 ft (410M)	
Maximum Width	4.4" (111mm)		6.75" (172mm)	
PRINT-OUTS				
Text Fonts	12 Proportional & Mono-Spaced OCR-A & OCR-B 10 Scaleable Vector Fonts			
Graphics	Sato Hex/Binary, .BMP or .PCX			
Bar Codes	19 including Four (4) 2-D Bar Codes			
Rotation	Text & Bar Codes can be rotated 90°, 180° & 270°			
PHYSICAL				
Dimension	W10.7" x D16.9" x H12.6" 271mm x 429mm x 321mm		W13.8" x D16.9" x H11.7" 352mm x 429mm x 298mm	
Weight	28.7 lbs (13 Kg)		41.9 lbs (19 Kg)	
POWER REQUIREMENTS				
Voltage	110V (± 10%); 220V (± 10%); 50/60Hz (±1%)			
Power Consumption	50W Idle; 130W Operating		50W Idle; 210W Operating	
ENVIRONMENTAL				
Operating	5 – 40°C; 15 – 85% RH, Non Condensing			
Storage	-20 – 40°C; Max 90% RH, Non Condensing			

Controls & Indicators

Operator Panel

LED Indicators

Status : Dark when Off Line
Green when printer is On Line
Red when an error condition exists
Flashing green when printer is imaging data

LCD Display : Illuminated when power is applied

Adjustments (controls behind front panel)

Print : Adjusts print darkness

Offset: Adjusts amount of back/forward feed for dispense / cut / tear-off position (+/- 3.75mm)

Pitch : Adjusts home position of the label +/- 3.75mm. Affects stop position of label, print position and dispense / cut position.

DSW2-3 : Sets printer configuration

Keys

Line : Toggles printer between On Line and Off Line mode. During printing it will pause the printer during a print job

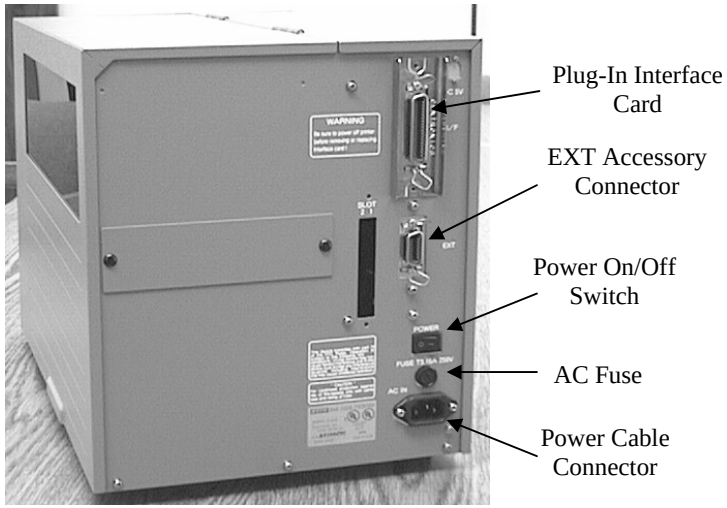
Feed : When Off Line, will feed one blank label. When On Line, will print another copy of the last printed label

Display Panel: 2-Line x 16 character LCD for setting operational parameters and displaying error conditions

DSW2-3 : DIP switches for configuring printer operation

Power : Turns printer On & Off

Rear Panel Connections



AC Input : 200-240V 50/60 Hz connector. Use the cable supplied

AC Fuse : Input power protection. Type 3.15A (for CL4xxe); Type 6.3A (for CL6xxe)/250V

Plug-In Interface: Plug-In Interface Card. Type specified at time of order. See *Operator & Technical Reference Manual* for descriptions

EXT : External signal connector

LCD displays "FRAMING ERROR"

- Communication format between the printer and host must be synchronised when using the serial interface. The printer RS232 Serial Interface card comes from the factory set for no parity, 8 data bits, 1 stop bit (N,8,1) at 9600 bps and using a Ready/Busy data flow control handshake (DSW1-8=OFF). If the computer is sending data in a different format, the printer is not able to correctly interpret it and a FRAMING ERROR message will appear on the LCD screen.

The printer is receiving data and seems to print, but the labels come out blank

- Check the ribbon to make sure the ink-side (the dull side) of the ribbon is in contact with the label. Other manufacturers may wind their ribbons differently. If they are loaded according to the diagram on Pg 6 of this Quick Guide, it will place the ink-side of the ribbon up. If this happens, you should clean the ink from the print head before reloading the ribbon.

LCD displays a "PAPER END ERROR"

- Are the labels pushed all the way to the inside of the printer and held in position by the Label Edge Guide? The Paper Out switch is located near the inside edge of the label path. If it is not in contact with the media, a PAPER END ERROR results. Check to make sure a notch or hole in the label is not causing the Paper Out switch to give a false indication.

LCD displays a "RIBBON END ERROR"

- If the Ribbon Supply Spindle is not turning, a RIBBON END ERROR message will appear. Make sure the ribbon supply core is not oversize and is spinning freely on the spindle.

- If the Darkness setting is too high, it can sometimes make the ribbon "stick" to the label. The resulting interruption in the ribbon movement can give a false RIBBON END signal.

- Are you printing on direct thermal paper but have not configured the printer for direct thermal printing with DSW2-1=On? In the direct thermal mode, the ribbon motion sensor is disabled since ribbons are not used for direct thermal printing.

Poor quality printing

- If the print has sections missing, visually inspect the print head to make sure it is clean and has no physical damage. If foreign matter is observed, clean the head using a cotton swab and the Thermal Print Head and Platen Cleaner from the SATO cleaning kit.

- If the print is too light, increase the heat setting using either software or the LCD panel. If the print is too dark and the bars in a bar code are fuzzy and run together, lower the heat setting. Fine adjustments can be made by adjusting the PRINT potentiometer on the front panel.

- If the print is too light, try varying the print speed using either the LCD panel or software commands.

- Is your ribbon/label combination compatible? Low quality paper labels may have a surface that is too rough for resin based ribbons to adhere. Wax based may not be able to adhere well to some synthetic label material.

LDC displays "SENSOR ERROR"

- Check to make sure the sensing method selected matches the media loaded. The printer comes from the factory set for detecting a label gap (DSW2-2=OFF) and there must be a gap of at least $^{1}/_{8}$" between labels. If Eye-Mark (a black line across the underside of the label) labels are used, DSW2-2 must be On to enable the reflective sensor.

- If continuous media is being used without any type of registration, the sensor must be turned off (DSW3-3=ON). Otherwise, the printer will feed approximately 20" of paper and then give a "SENSOR ERROR" message.

- If the label gap or eye-mark registration bar does not extend across the width of the label, you may have to adjust the position of Label Sensor Assembly. See the *Operator & Technical Reference Manual*, *Section 2* for information on adjusting the Label Sensor Assembly.

- Make sure the labels are routed *through* the Label Sensor, not over the top of it.

Initial Set-Up

Connecting the Printer

1. Locate a suitable spot for the printer. It should be within 6' of the host if using IEEE1284 Parallel interface or within 3.5' if using an RS232 interface. For other types of Plug-In interface cards, see the *Operator & Technical Reference Manual*. Make sure there is adequate room above and to the right of the printer for the label access door to swing open.

2. Plug the AC cable provided into the back of the printer and connect to a suitable VAC outlet.

3. Open the print head and load the ribbon using the ribbon routing guide located on the inside of the top cover. Be sure to position the ribbon roll correctly on the Ribbon Supply Spindle and place the spare take-up core so that it will take up when in a counter clockwise direction.

4. Place the label roll on the Label Supply Spindle and push the green Label Roll Retainer on the spindle until it pushes the label roll all the way to the inside of the printer. The labels should come off the bottom of the roll (labels wound face-in on the roll).

5. Route the labels as indicated by the label routing diagram on the inside of the top cover. The labels should go under the plastic guide, through the Label Sensor Assembly, under the print head and out the front of the printer. Position the Label Edge Guide towards the inside of the printer until it barely contacts the ouside edge of the labels.

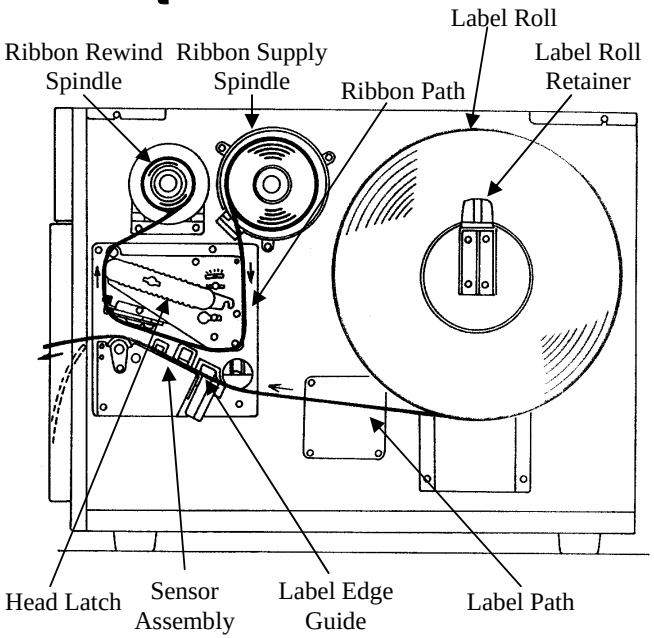
6. Close the Print Head Latch and then the side access door last.

7. Select the proper label sensing method using the front panel DIP switches. The DIP switch function chart is located on the inside of the front cover. The printer comes from the factory set for label gap detection (DSW2-2, DSW3-3 both OFF). Note that the OFF position for the DSW switches is down and the ON position up.

8. Apply power by placing the front panel Power switch in the "1" position.

9. The Power and On-Line LEDs should be illuminated and ONLINE should be displayed on the LCD.

10. Press the LINE key once. The On Line LED should go out and OFFLINE should be displayed on the LCD.



11. Press the FEED key once. The printer should feed out one label and stop.

12. If the printer feeds 20" of blank labels and stops with a "SENSOR ERROR" on the LCD screen, check to make sure the labels are properly routed through the label sensor and not over the top of it.

13. Turn AC power off by placing the POWER switch in the "0" position.

Printing a Test Label

After labels and ribbon are loaded into the printer, a test label can be printed using the Front Panel Controls.

1. Apply power to the printer while simultaneously pressing the FEED key.

Printer does not print when data is sent

- Check the interface cable to make sure it is connected to the correct port on the PC.
- If you are using the serial interface, verify that the baud rate of the host matches that of the printer.
- Some complex labels with large graphic images can take a long time to transmit to the printer (especially when using the serial interface) and image in the buffer before they can be printed. Have you allowed enough time for this process?
- The On-Line LED will blink while the printer is imaging a label in memory. If it is a very small label, the On-Line LED will blink quickly one time. If it is a long label, it will blink for a correspondingly longer time.
- If the On-Line LED does not blink, place the printer in the Hex Dump mode and resend the data stream. A list of the received data characters will be printed out in hexidecimal format. See Section 3, Hex Dump Mode on Page 3-25 of the *Operator & Technical Reference Manual* for information on how to place the printer in the Hex Dump mode. If the data cannot be printed in the Hex Dump mode, the printer is not receiving any data.
- Make sure your computer program is sending data to the correct printer. More than one printer can be assigned to the same port in the Windows Printer dialog box. Make sure the printer listed in the Print Setup window is the correct model.

The printer feeds a label, but does not print anything

- Is the label wide enough? The first dot print position is on the outside edge of the print head and narrow labels are justified towards the inside of the printer. You may have to configure the printer with an Offset value to correctly position the image on the label. Refer to the *Operator & Technical Reference Manual, Section 2* for instructions on how to do this.
- If you are printing in the direct thermal mode, make sure you are using direct thermal paper
- If you are printing in the thermal transfer mode, check to make sure the ribbon is loaded properly with the ink (dull side) in contact with the media.

Windows Drivers

Windows drivers are provided on the CD-ROM. They let you print labels from virtually any Windows application program. The driver is loaded like any other Windows printer driver.

After the driver is installed, you can send data to the Printer just like any other printer on your system – simply specify the specific model in the Print dialog box of your Windows application. Printer configuration is managed using the Advanced dialog box. To print bar codes, you must first define a bar code font using the Barcodes dialog box. Documentation describing how to load, configure and use the Windows driver is contained in the CD-ROM under 'Driver Documentation'.

Windows drivers are very convenient for printing limited numbers of labels or simple production jobs. However, they can also be very inefficient in the way they transfer data. For e.g., if you choose a printer resident font, the printer responds very quickly. However, if you specify a Windows True-Type font, it is transmitted to the printer in a graphics format that results in large data transfers to the printer, slowing down the printer response time. It is always best to use a Label Design program that supports all of the features of the SATO printer being used, thereby increasing the efficiency of the operation and ensuring optimum response time.

Troubleshooting the Printer

Printer won't go On-Line

- Is the Power LED on? Check the power cable and AC Fuse.
- There is an error condition. Make sure the Head Latch is closed.

Printer beeps and refuses to print

- This is usually caused by an incorrect data stream. Try placing the printer in the Hex Dump mode and printing a copy of the data being sent to the printer. Examine the incoming data stream for incorrect command usage. Refer to the *Operator & Technical Reference Manual* for explanations of proper command usage.

2. The printer will beep once and display a 'TEST PRINT MODE, CONFIGURATION" on the LCD screen.

3. Press the FEED key and the LCD will change the display to 'TEST PRINT SIZE, 10cm' to prompt user to select size of label.

4. Press the LINE key to select the size of the label loaded.

5. Press the FEED key to start printing test labels. The printer will continue to print test labels until the FEED key is pressed again, placing the printer in the PAUSE mode. Pressing the FEED key again will continue the test label printing cycle.

6. To stop printing test labels, pause the printer by pressing the FEED key and then turn power Off. Turing power back On will place the printer in the normal On-Line mode where it is waiting for print data.

Configuring the Printer

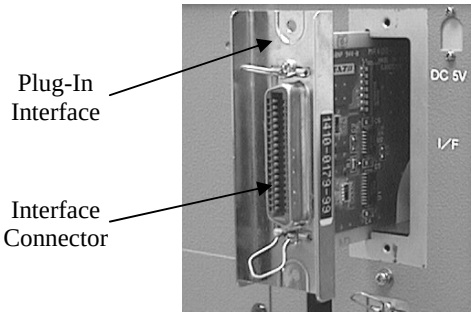
There are two DIP switches (DSW2 & DSW3) located inside the cover. These switches can be used to set :

- Thermal Transfer of Direct Thermal Mode
- Label Sensor Enable / Disable
- Head Check Mode
- Hex Dump Mode
- Single Job or Multi-Job Receive Buffer
- Operation Mode

In addition, a third DIP switch is located on the RS232 Serial Adapter card and is used to set the RS232C transmit/receive parameters. Each switch is an eight section toggle switch. The ON position is always to the top. To set the switches, first power the unit Off, then position the DIP switches. Finally, after placing the switches in the desired positions, power the printer back On. The switch settings are read by the printer electronics during the power up sequence. They will not become effective until the power is cycled.

Other features can be enabled with different DSW switch combinations. The function of each DSW switch is listed on a chart on the inside of the front cover. A more detailed description is provided in the *Operator & Technical Reference Manual, Section 3.* When changing configuration via the DSW switches, the power to the printer must be cycled before the new settings become activated.

Computer Connections

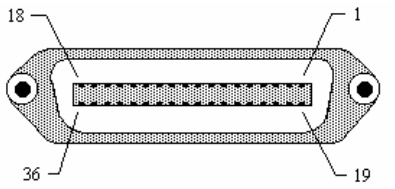


The CL 'e' Series comes with Plug-In Interface card with the appropriate connector. The type of Plug-In Interface card desired is specified at the time of order. It must be installed in the printer before the computer connection is made.

To complete the installation, you will need the appropriate interface cable to connect the printer to the output port of the host computer. These can be purchased locally or from your SATO supplier. If you need additional information on interface types, connector types or cabling pin-outs, please refer to *Operator & Technical Reference Manual, Section 6.*

IEEE 1284 Parallel Interface

The Parallel interface connector is a female 36-pin Centronics type.



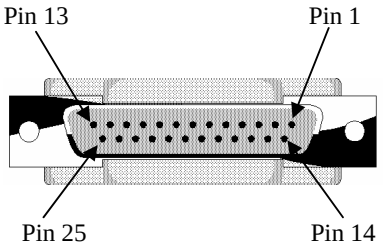
Centronics Connector On Printer

PIN	SIGNAL	DIRECTION	PIN	SIGNAL	DIRECTION
1	$\overline{\text{STROBE}}$	To Printer	19	STROBE Return	Reference
2	DATA 1	To Printer	20	DATA 1 Return	Reference
3	DATA 2	To Printer	21	DATA 2 Return	Reference
4	DATA 3	To Printer	22	DATA 3 Return	Reference
5	DATA 4	To Printer	23	DATA 4 Return	Reference
6	DATA 5	To Printer	24	DATA 5 Return	Reference
7	DATA 6	To Printer	25	DATA 6 Return	Reference
8	DATA 7	To Printer	26	DATA 7 Return	Reference
9	DATA 8	To Printer	27	DATA 8 Return	Reference
10	$\overline{\text{ACK}}$	To Host	28	ACK Return	Reference
11	BUSY	To Host	29	Busy Return	Reference
12	PTR ERROR	To Host	30	PE Return	Reference
13	SELECT	To Host	31	$\overline{\text{INIT}}$	From Host
14	$\overline{\text{AUTOFD}}$ (1)	To Host	32	$\overline{\text{FAULT}}$	To Host
15	Not Used		33	Not Used	
16	Logic Gnd		34	Not Used	
17	FG	Frame Ground	35	Not Used	
18	+5V (Z=24K ohm)	To Host	36	$\overline{\text{SELECTIN}}$ (1)	From Host

(1)Signals required for IEEE 1284 mode

Serial Interface

Pin No.	Description
1	Frame Ground
2	Transmit Data
3	Receive Data
4	Request-To-Send
5	Clear-To-Send
6	Data Set Ready
7	Signal Ground
20	Data Terminal Ready



The RS232 Serial Interface connector is a DB-25F. To correctly interface to a PC serial port requires a DB-25P/9P to DB-25F Null Modem Cable. The DSW1 configuration settings for the RS232 data format must match those of the host system. If they do not, the printer will beep when data is sent and display a FRAMING ERROR message on the display. If the Baud Rate selected by DSW1-5 and DSW1-6 does not match that of the host, the printer will ignore any data sent. The serial baud rate and word format settings can be changed on either the printer or the host to correct the condition, but they must match.